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**A COMPARISON OF SOCIAL INFLUENCES AND
RATIONAL APPROACHES TO
E-MAIL USE**

Name: Michele A. DeWerth
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Term Degree Awarded: Spring, 1995

This analysis of a random sample survey sought to determine what impact social influence, personal experience and perceived electronic mail characteristics have on electronic mail use. With the increasing predominance of computers and computer-mediated communication, electronic mail usage is becoming an important means of communication within and among organizations. Electronic mail may also become an important way organizations can communicate with individuals in their communities. Previous research has suggested electronic mail provides many benefits and conveniences over previous means of communication.

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THE FLORIDA STATE UNIVERSITY

COLLEGE OF COMMUNICATION

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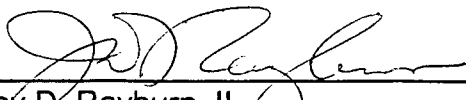
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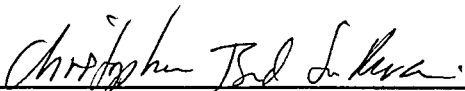
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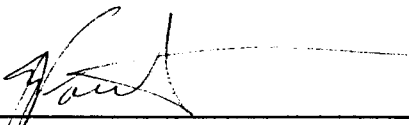
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**Degree Awarded:
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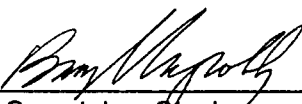
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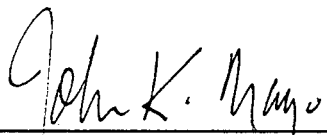

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I dedicate this to my parents for all their love
and support throughout the years.

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CHAPTER I

INTRODUCTION

The purpose of this study was to determine what impact social influence, personal experience and perceived electronic mail characteristics have on electronic mail use. With the increasing predominance of computers and computer-mediated communication, electronic mail usage is fast becoming an important means of communicating within and among organizations and individuals.

Statement of the Problem

As we move into the Information Age, more than half of the labor force will be information workers (Rice and Bair, 1984). With the advent of these information workers comes the conversion of computer technology from a device only computer programmers understand to a standard component of offices, homes and schools. This new technology, specifically electronic messaging systems, has the capability of providing users with many conveniences over previous methods of communication (Rice and Bair, 1990). With these new communication options comes a need to understand the motives impacting use.

Overview

Chapter II begins with a brief look at the growing importance of electronic mail in the workplace, followed by a definition of electronic mail. Chapter II

continues with a short summary of the history of electronic mail and is followed by a chronicle of each of the three variables expected to influence use: perceived electronic mail characteristics, social influences and personal experiences. The most vital role of this review is the look at the specific variables that attempt to explain e-mail use.

Chapter III examines the methods and procedures used, and several hypotheses are introduced. Chapter IV looks at the results of the study. Chapter V concludes with a summary of results and possible areas of future research.

Chapter II

LITERATURE REVIEW

Introduction

This literature review will examine the previous research in several areas of electronic mail use. The goal of this review is to analyze the specific areas of research that impact on electronic mail use. These areas are perceived electronic mail characteristics, defined as the rational approach, social influence and personal experience.

The review of the literature begins with a brief look at the growing importance of electronic mail in the workplace, followed by a short description of electronic mail. The most vital role of this review, however, is to look at the specific variables that seek to explain use. A short summary of the history of electronic mail is followed by a chronicle of each of the three variables expected to influence use: perceived electronic mail characteristics, social influences and personal experiences.

History

With the increasing predominance of computers and computer-mediated communication, electronic mail usage may become an important means of communicating within and among organizations. Electronic mail may also

become an increasingly important way organizations can communicate with individuals in a community. With the conversion of computer technology from a device only computer programmers could understand to a standard component of offices, homes and schools, comes a need to understand the motives impacting use. As McLuhan and Powers (1989) point out, the world is fast becoming a "Global Village" because of the proliferation of these machines. Ted Hoff, of Intel Corporation, invented the microprocessor in 1971, and according to Rice, et al. (1984): "Hoff's invention was a key event setting off the Information Revolution; it made possible the microcomputer," (p. 38). In 1969, the U.S. Department of Defense Advanced Research Projects Agency (DARPA) sponsored the first major computer network, ARPANET, to share resources between academic, industrial, and government research facilities (Schaefermeyer and Sewell, 1988). According to Rice and Bair (1984), "We have entered the information economy, where more than half the GNP is allocated to handling information -- an economy that is populated by information workers who represent more than half the labor force" (p. 187).

E-Mail Defined

Electronic mail is a system designed to move addressable text messages from one computer mailbox to another and is generally thought of as:

1) asynchronous, 2) fast, and 3) text-based (Sproull and Kiesler, 1986). "A typical user will log into the system once or twice a day, then rapidly dispose of

his or her incoming messages. Unless the user deletes a specific message, it remains in his or her files and can be called up later for reference. For outgoing messages, (electronic messaging system) offers simple word processing, usually including a spelling checker" (Panko, 1984, p. 39).

Productivity Benefits

Electronic messaging systems have the capability of providing users with many conveniences over previous methods of communication. Many thorough literature reviews on the productivity potential of computer mediated communication systems exist (Rice and Bair, 1990; Rice and Torobin, 1986; Rice, 1992; Culnan and Markus, 1987; Steinfield, 1986; and Lea, 1991).

Rice and Bair (1990) list the following advantages provided by electronic mailing systems:

- permanent, searchable record
- no simultaneous activity necessary
- less meeting scheduling -- or meeting
- control over timing and preparation of response
- freedom from geographical constraints -- including time zones
- no interruptions
- fast delivery (if recipient logs on)
- automatic headers and message information
- easy reply, further distribution ('carbon copies')
- increased contacts...
- rapid responses...
- more upward and diagonal organizational communication...
- substitution for some other media, under some conditions
- potential for reduction in travel...
- medium for creation, transmission, and receipt are the same
- fewer nonverbal constraints...
- one action (possibly automatic) for multiple distribution---
- information search not limited by known contacts

communication can develop around timely or common interests...(p. 192).

Research also suggests benefits from decreased shadow costs by eliminating the need to retype documents and the reduction of telephone tag (Rice and Shook, 1990; Rice and Bair, 1990). Rice and Bair (1990) also listed three other areas of improvement: 1) increased control reduces the amount of information needed to complete a task, 2) response time should be reduced, and 3) the automation eliminates the need for constant revision of items such as mailing lists. Millman and Hartwick (1987) found that although office automation has increased the need for computer skills, workers felt their jobs were more interesting. Workers also perceived their jobs as more important and reported an increase in their productivity.

Rational Approaches

The rationalist approach has conceived of many theories to try and explain media choice. Information processing theory interprets organizations "as social structures constituted to gather and interpret information about the environment and use it to convert other resources into outputs such as products and actions," (Rice and Shook, 1990, p. 196). This view postulates that organizations match internal structures to external requirements (Rice and Shook, 1990; Daft and Lengel, 1986, Galbraith, 1977; Tushman and Nadler, 1978; Weick, 1979).

Computer-mediated communication has been evaluated on its "Social Presence", insofar as it is the medium perceived as personal or impersonal

(Short, et al. 1976; Rice, et al. 1984). Short, et al. (1976) define Social Presence as being an inherent part of the communication channel. They found a weak positive correlation between a favorable medium with higher social presence and the people met through these sources. Rice (1993) states that social presence theory "appears to provide a useful, consistent, meaningful, stable, and discriminating way to characterize media," (p. 481). Electronic mail was found to be used for low social presence activities, such as document delivery (Sullivan, 1995).

William's (1977) literature review of face-to-face and mediated communication found the impact of nonverbal content exaggerated and verbal and nonverbal cues redundant. Somewhat surprising, people involved in mediated communication were more likely to influence behavior change (Williams, 1977). This behavior modification seems to conflict with the concepts of Social Presence; however, Short, Williams and Christie (1976) provide a possible explanation. They theorize that the additional nonverbal cues provide a distraction, and once they are removed, those involved can concentrate more narrowly on the subject. Albertson (1980), however, criticized Social Presence theory for its inability to account for differences between subjective and objective observations of the medium; that is, "the perceived effectiveness of a medium...may differ from its actual effectiveness" (p. 392). Kim's (1994) findings reflected a perception that computer mediated communication allowed for freer and more frequent communications than face-to-face communication.

Because computer-mediated communication does not include visual and traditional nonverbal clues, social presence theory would suppose that computer mediated communication systems is less friendly and more impersonal and therefore would be a poor conductor of emotion. Rice and Love (1987), however, found that computer mediated communication can convey socioemotional content. Hiltz and Johnson (1990) determined that the ability of the system to convey socioemotional content positively affected the users.

An approach similar to Social Presence is Media Richness (Lengel & Daft, 1988; Daft & Lengel, 1986). According to the Media Richness approach, each medium is different in its ability to convey information. The characteristics used to measure this are:

1. Ability to handle multiple information cues simultaneously
2. Ability to facilitate rapid feedback
3. Ability to establish a personal focus (p. 226).

Lengel and Daft (1988) indicate the hierarchy of Media Richness as follows:

Face-to-face is the richest medium because it has the capacity for direct experience, multiple information cues, immediate feedback, and personal focus. Face-to-face discussions enable the assimilation of broad cues and deep, emotional understanding of a message. Telephone conversations and interactive electronic media provide rapid feedback, but lack the element of "being there." Eye contact, gaze, blush, head nods, posture, and other body language cues are eliminated. Electronic media, therefore, fall short of the richness of face-to-face communications. Written media that are addressed, such as memos, notes, and reports, can be personally focused, but they convey limited cues and are slow in feedback. Impersonal written media (including fliers, bulletins, and standard computer reports) are the leanest, providing

no personal focus on a single receiver, limited information cues, and not enabling feedback. Thus, each medium has an information capacity based on its ability to facilitate multiple cues, feedback, and personal focus, (p. 226).

Lengel and Daft (1988) created a media selection framework, which matched richer media, necessary to reduce equivocality, with nonroutine communication (Trevino, et al. 1987) and leaner media to routine communication. Equivocality is ambiguity, or rather "the existence of multiple and conflicting interpretations about an organizational situation" (Daft, et al. 1987, p. 357). Daft, et al. (1987) identified uncertainty as a previous area of study within information processing.

Galbraith (1977) defines uncertainty as "the difference between the amount of information required to perform the task and the amount of information already possessed by the organization" (p. 36-37). Daft, et al. (1987) explain the major difference between uncertainty and ambiguity as the information processing response of managers within an organization. In the presence of uncertainty, managers seek facts; and in the presence of ambiguity, managers solicit viewpoints. The researchers surmise that equivocality issues, which require social support within the environment, and not uncertainty issues of other information systems, which require facts, face the new electronic media. Daft, et al. (1987) found some support for this approach among the more highly-rated managers; as these managers were faced with increasingly nonroutine messages, they moved from leaner to richer media.

Golden, et al. (1992), however, did not find a significant impact on use produced by Media Richness, which they defined as "task orientation, usability, direction of communications, (and) openness of communications" (p. 307).

Schmitz and Fulk (1991), instead of analyzing media on the objective media richness continuum, look at "perceived" media richness. Perceived media richness, they explain, can vary from person to person. They found that perceived media richness affected media assessment, as well as media use. Electronic mail ranked lower than expected on the perceived media richness continuum; a conclusion also supported by Rice (1993). Sullivan (1995) found that electronic mail was preferred to the telephone. It is important to remember that electronic mail is unique and differentiated from other media by its ability to combine "the low-involvement attributes of writing with high-involvement attributes such as the speed of interactivity" (p. 6).

Another approach to explaining e-mail use looks at individual differences that impact use of the system. Zmud (1979), following an examination of the literature, determined that individual differences and views affect use. Mackay (1988) discovered a great diversity in the way the electronic mail system was used. This diversity can be explained as differing views of the mail system which are influenced by the individual's work. Individual differences in learning affected the level of performance; high visual learners did better at a task than low visuals learners, while abstract thinkers did better than concrete thinkers (Sein and Bostrom, 1989).

Hiltz (1984) found attitude and motivation are the strongest predictors of acceptance of computer-mediated communication. During initial implementation, research findings supported addressing issues of concern and offering choices to the new users; this increased acceptance of the system (Baronas and Louis, 1988).

Robey (1979) found overall support for the thesis that user's perceptions are significantly correlated to system use. Davis (1989) explains both the concept of "perceived usefulness" and "perceived ease of use". He defines perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance." He defines perceived ease of use as "the degree to which a person believes that using a particular system would be free of effort" (p. 320).

Pittard (1990) defines usability as the relationship between user, task, system, and environment, with the level of usability based on how these components work together. Both perceived usefulness and perceived ease of use were correlated to self-reported system use (Golden, et al. 1992; Davis, 1989). Perceptions of the electronic mail system's characteristics affected use, and perceived usefulness had the strongest relationship (Steinfeld, 1986). Trevino and Webster (1992) also found that "perceived ease of use related to attitudes, perceived communication effectiveness, and quantity," (p. 564). Sullivan and Rayburn (1990) examined not only ease of use, but also found that

communication efficiency affects communication use. Sullivan (1995) concluded that efficiency influences use.

In summary, the rational approach has explored many avenues of affect through the years of research. As the research has evolved, more attention has been focused on how individuals perceive certain characteristics of the system. These characteristics include: efficiency, perceived ease of use, and perceived usefulness.

Social Influence

A newer approach to understanding communication technology effects is the social influence model (Fulk, et al. 1987; Fulk, et al. 1990). The authors of this approach contend that past research has failed to acknowledge that activities operate in a world where others exist. Social psychology (Asch, 1952) supports the concept that group affiliations affect attitudes.

Social learning theory (Bandura, 1977) and social information processing (Salancik and Pfeffer, 1978) are two theories that comprise the underpinning of the social influence model. Social learning theory posits that learning happens from observing other people's behavior and its repercussions (Bandura, 1977). Social information processing viewpoint expresses that "multiple social influences on attitudes are more consequential for predicting attitude at work than are individual needs or other characteristics" (Salancik and Pfeffer, 1978, p. 248).

The social influence approach also acknowledges the fact that people do not always choose a channel based on objective efficiency and effectiveness of the medium (Schmitz and Fulk, 1991). The social influence model agrees that objective features account for some perceptions, but they also believe that views are influenced "to a substantial degree by the attitudes, statements, and behaviors of coworkers" (Fulk, et al. 1990, p. 121). In their analysis of research using the social influence model, Fulk and Boyd (1991) found various levels of support for this proposed theory.

Rice (1993) found little support for social influence. Schmitz and Fulk (1991) only found modest support for social influence. Sullivan (1992) found little support for social influence; however, he argues that the social influence indicators currently used may not accurately measure social influence. Golden, et al. (1992) concluded that informal and formal pressure can positively effect use. Electronic groups have also been shown to act like other groups, although "shared no physical space, their members were invisible, and their 'interaction' was asynchronous," (Finholt and Sproull, 1990, p. 59). Sproull and Kiesler (1986), however, found that electronic mail systems possessed few social context cues.

In conclusion, social influence proponents propose that for most people, the workplace is not an environment of isolation. It is an environment of influences that affect a person's behavior.

Personal Experience

Both the areas of rational choice and social influence briefly acknowledge some interest in personal experience; however, neither seems to credit it with anything but superficial effect. Early research in this area (Zmud, 1979) determined that individual differences and views could effect use. Mackay (1988) discovered electronic mail system use was varied among users, which she explained as being influenced by an individual's work.

During its initial conception, the social influence model only acknowledged personal experience with the medium to the extent that less proficient individuals would be more affected by social influence (Fulk, et al. 1990). Kerr and Hiltz (1982) found that use was connected to experience and knowledge of the medium. Thomas and Griffin (1983), however, took this finding further and concluded that "familiarity with the task may reduce the influence of and need for social information," (p. 674). The social influence model was revised to include individual expertise (Schmitz and Fulk, 1991), because "Medium expertise is seen to be an important precondition for use of new media, rather than a social influence factor itself" (p. 492).

In conclusion, only a peripheral look has been given to the concept of previous personal experience related to the task. More insight could be gained from exploring the possibilities that personal experience has an impact on use.

Conclusion

This literature review has examined the field of electronic mail use through the concepts of the rational approach, social influence and personal experience.

As the research evolved, more attention was focused on how individuals perceive certain characteristics of the system, including perceived ease of use, perceived usefulness and efficiency. Social influence supporters suggest the environment influences a person's behavior. Personal experience has only briefly been discussed as it relates to use.

The next section of this study will look at the past research and pose the question, how do the rational approach, social influence and personal experience affect use?

CHAPTER III

METHODS AND PROCEDURES

Rationale

Past research has focused on the realization that perceptions of the system's characteristics influence use (Schmitz and Fulk, 1991; Sullivan and Rayburn, 1990; Robey, 1979; Davis, 1989; Golden, et al. 1992). A newer approach toward electronic messaging systems focus on social influence (Fulk, et al. 1987; Fulk, Schmitz and Steinfield, 1990; Schmitz and Fulk, 1991). A few researchers have brought to the field the awareness that prior knowledge and expertise with computer technology may influence use (Thomas and Griffin, 1983; Schmitz and Fulk, 1991). Each of these areas of research summarized in this review have demonstrated varying degrees of influence on electronic mail use.

Research Question

A review of literature, raises the question: How do the rational approach, social influence and personal experience affect e-mail use?

The following hypotheses have been formulated to address this issue.

H1. The rational approach, social influence and personal experience are correlated with electronic mail use.

H2. The rational approach explains use more than social influence or computer experience.

H3. People with less computer experience are affected more by social influence, while people with more computer experience are impacted more by the rational approach.

Methods

Electronic surveys were sent to a random sample of 800 users of an electronic messaging system at an U.S. Air Force base in the southeast. The questionnaire was retransmitted to the same group of 800 users over a period of three weeks. Each mailing drew more responses. Of the 800 questionnaires distributed through the electronic mail system, 130 were usable, while another 80 were rejected as unusable for various reasons, resulting in a completion rate of 18 percent.

The questions for the survey were drawn from a questionnaire distributed by Sullivan and Rayburn (1990) to the Florida legislature, from the literature on social influence (Fulk, et al. 1990) and from the literature on experience and knowledge (Thomas and Griffin, 1983). See: Appendix 2.

Procedures

Social Influence Variable

The following questions that were combined to create the social influence variable were based on the social influence model (Fulk, et al. 1990) literature about the social environment affecting use. The social influence variable was created by combining questions 12 through 15, 19 and 47 on the survey with all responses on a Likert-type scale. Specifically, these were as follows:

How much do other members of your office use e-mail?

Everyone I know seems to use e-mail.

I use e-mail because everyone in my office does.

Members of my office favor different types of communication over e-mail (different types of communication such as memos and telephone).

Many people I need to communicate with use e-mail.

How many more people do you find yourself communicating with because of e-mail?

A correlation table was constructed to test how each variable was related to the other (Table 1). Except for one anomaly, the variables were significantly correlated at $p < .01$.

A Cronbach's alpha coefficient was used as the quantitative test for reliability of the questionnaire items linked to social influence characteristics.

The questionnaire items were run resulting in a reliability with an alpha level of .7593. See Appendix 1.20.

Table 1

Social Influence Correlation

	EVERYONE IN OFFICE USES IT	EVERYONE I KNOW USES IT	USE BECAUSE OTHERS USE IT	NEED IT TO COMMUNICATE	COMMUNICATE WITH MORE PEOPLE
EVERYONE I KNOW USES IT	.4313 (124) P= .000				
USE CAUSE OTHERS USE IT	.3604 (125) P= .000	.4130 (127) P= .000			
NEED IT TO COMM.	.3517 (124) P= .000	.5592 (126) P= .000	.3314 (127) P= .000		
COMM. WITH MORE PEOPLE	.2686 (125) P= .002	.3559 (127) P= .000	.1154 (128) P= .195	.4924 (127) P= .000	
OTHERS FAVOR IT	.4324 (122) P= .000	.2588 (124) P= .004	.2358 (125) P= .008	.3788 (125) P= .000	.2646 (125) P= .003

Rational Approach Variable

To create the rational approach influences variable, questions 22 through 27 were combined. These questions, directly from Sullivan and Rayburn (1990), addressed why the respondents used e-mail, specifically referring to ease of use, reliability, flexibility, power of the program, effectiveness, and if it was a time-saver. A correlation table was created and found a strong relationship among the rational approach (Table 2).

Table 2
Rational Approach Correlation

	EASE OF USE	RELIABLE	FLEXIBLE	POWER	EFFECTIVE
RELIABLE	.5231 (124) P= .000				
FLEXIBLE	.6101 (124) P= .000	.4473 (124) P= .000			
POWER	.5905 (124) P= .000	.5221 (126) P= .000	.5139 (124) P= .000		
EFFECTIVE	.5887 (125) P= .000	.4712 (126) P= .000	.6008 (125) P= .000	.6359 (126) P= .000	
SAVES TIME	.5172 (125) P= .000	.3661 (125) P= .000	.5426 (125) P= .000	.5265 (125) P= .000	.7390 (126) P= .000

A Cronbach's alpha coefficient was used as the quantitative test for reliability of the questionnaire items linked to rational approach characteristics. The questionnaire items were run resulting in a reliability with an alpha level of .8795. See Appendix 1.21.

Experience Variable

Computer experience is the amount of expertise a respondent reported he or she had with a computer. This specifically addresses exposure/use based on Thomas and Griffin (1983) who postulated that the more familiar someone was with task, the less social influences played a part. The question, in the form of a

likert scale, specifically asked: Which of the following best describes how you would rate your expertise with computers and computer software? Almost half (43.9%) considered themselves at least above average users, while nearly the same proportion (42.3%) considered themselves average users. Only a small percentage (13.1%) of respondents reported being a below average user.

Table 3

Computer Experience

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
average	2	17	13.1	13.8	13.8
	3	52	40.0	42.3	56.1
	4	33	25.4	26.8	82.9
accomplished	5	21	16.2	17.1	100.0
	9	7	5.4	Missing	
Valid cases	123	Missing cases	7		

The Social Influence variable and the Rational Approach variable in their pooled form, along with Personal Experience were used to explain use of e-mail as discussed in the following chapter. All the statistics were run on an IBM PC using the statistics program, SPSS for Windows.

CHAPTER IV

RESULTS

Of those who answered, well over half had received college degrees (bachelors, 22.9%; masters, 40.7%; PhD., 1.7%) (Appendix 1.1). The average age of the respondent was 44 years (Appendix 1.2).

The average amount of years of computer use was over 10, while average electronic mail use was little over 3 years (Appendix 1.4). On the average, the computer was reportedly used almost 3.5 hours a day, while electronic mail was used 51 minutes a day (Appendix 1.4, 1.5). A majority (86.2%) of those who responded reported their computer experience as average or above. Over half of those (43.9%) reported as above average or accomplished.

Almost everyone (89.8%) reported that computers were very important or extremely important for the daily activities on the job. A majority (71.9%) felt that electronic mail was at least very important to daily activities on the job (Appendix 1.7, 1.8).

After a few introductory questions, the respondents were asked to list three adjectives describing why they find electronic mail useful. Because there were many descriptives listed, the adjectives were grouped into the following categories:

1. Written -- written, record, confirmation, clear, reply, record, accurate, tracable, paperless, accurate, literate
2. Easy -- easy, friendly, informal
3. Quick -- quick, immediate, fast, ease, timesaver, timely, realtime, handy
4. Informative -- informative, current, knowledge, data, communication, personal, popular, detailed
5. Efficient -- efficient, effective, omnipresent, cheap, direct, shotgun, organize, practical, reliable, universal, multiuse, universal, valuable, productive, access, standard, independent, connective, receptive, powerful, consolidated, available
6. Flexible -- flexible, versatile, asynchronous, convenient, optional, remote access, responsive

Table 4

Why E-mail is Useful

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
written	1	37	9.5	11.3	11.3
easy	2	32	8.2	9.8	21.2
quick	3	91	23.3	27.9	49.1
informative	4	37	9.5	11.3	60.4
efficient	5	74	19.0	22.7	83.1
flexible	6	55	14.1	16.9	100.0
	9	64	16.4	Missing	
Valid cases	326		Missing cases	64	

Over a quarter (27.9%) of the responses were in the "quick" category for why they thought e-mail was useful (Table 4). The top three categories, "quick", "efficient" (22.7%), and "flexible" (16.9%) closely resemble the Rational

Approach variable. It would appear that the Rational Approach would therefore explain more use than Social Influence.

When asked about specific uses of electronic mail, over half (56.7%) used electronic mail to request information often or all the time. A majority (61.7%) used electronic mail often or all the time to answer questions and a large portion (53.6%) used electronic mail often or all the time to circulate memos. See Appendix 1.10-1.12.

The respondents were asked to rate the importance of e-mail features and many features ranked as very important to extremely important. Being able to communicate at different times was at least very important to the vast majority (81.9%) of those surveyed. Assurance that the message was received was at least very important to nearly all (81.9%) surveyed. Three-fourths (76.2%) of the respondents felt that speed of response was at least very important. The clarity of the message was at least very important to a majority (69.8%). The ability to store a message, forward messages and send multiple messages was at least very important to over half (66.4%, 62.2%, 61.9%, respectively). See Appendix 1.13-1.19.

H1. The rational approach, social influence and personal experience are correlated with electronic mail use.

A correlation matrix was produced to evaluate the relationship between computer experience, the rational approach and social influence. It produced

results that show there is a relationship between e-mail use, the rational approach variable and the social influence variable (Table 5).

Table 5

Variable Correlation

	COMPUTER EXPERIENCE	SOCIAL INFLUENCE	RATIONAL APPROACH
SOCIAL INFLUENCE	.1688 (117) P= .069		
RATIONAL APPROACH	.2244 (119) P= .014	.5265 (117) P= .000	
EMAIL USE	-.0089 (122) P= .923	.4759 (120) P= .000	.3099 (122) P= .001

(Coefficient / (Cases) / 2-tailed Significance)

There was a moderate correlation (.4759) between the social influence variable and electronic mail use at a significance level of $p=.000$. Between the rational approach and electronic mail use, a slightly lower correlation coefficient exists (.3099) with a significance level of $p=.001$. The social and rational variables were correlated at the highest Pearson's r in this table (.5265) at the significance level of $p=.000$. Computer experience, however, was not significantly correlated with e-mail use, social influence, or rational approach (Table 5). The hypothesis, therefore, can not be accepted in its entirety. Only social influence and the rational approach are significantly correlated to e-mail use.

H2. The rational approach explains use more than social influence or computer experience.

For this hypothesis, it was expediant to run a regression. E-mail use was regressed with the Social Influence variable, the Rational Approach variable and computer experience.

By regressing these three variables with e-mail use, it was apparent that social influence was the only one of the three to significantly explain use. The Social Influence variable had a Beta of .4274 with a significant T =.000 (Table 6). Social Influence accounted for nearly half of the 24.5 percent of variance explained by the three (Table 6).

Table 6

E-Mail with Social Influence, Rational Approach, Computer Experience

MULTIPLE REGRESSION
Listwise Deletion of Missing Data
Dependent Variable.. EMAILUSE

1.. COMEXPER
2.. SOCINFL2
3.. RATION2
Multiple R .49529
R Square .24532
Adjusted R Square .22454
Standard Error .73776
Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	19.28478	6.42826
Residual	109	59.32730	.54429
F =	11.81042	Signif F = .0000	

Variable	B	SE B	Beta	T	Sig T
SOCINFL2	.088475	.019817	.427370	4.465	.0000
RATION2	.023531	.018114	.126319	1.299	.1967
COMEXPER	-.108610	.077183	-.120177	-1.407	.1622

The hypothesis must be rejected because the rational approach does not account for use more than social influence.

H3. People with less computer experience are affected more by social influence, while people with more computer experience are impacted more by the rational approach.

Respondents were asked to rate their computer expertise on a scale from 1 (none) to 5 (accomplished user). To determine high experienced users and lower experienced users, the sample was split at the median (3, Table 3). A paired t-test was calculated to compare the high and low experienced users with social influences and rational approaches.

Table 7

Computer Experience, High-Low with Social Influence

t-tests for independent samples						
		Variable	Number of Cases	Mean	SD	SE of Mean
SOCIAL INFLUENCES						
		COMPUTER EXPERIENCE HIGH	66	20.9242	4.521	.557
		COMPUTER EXPERIENCE LOW	51	22.0392	3.340	.468
Mean Difference = -1.1150						
Levene's Test for Equality of Variances: F= 3.122 P= .080						
t-test for Equality of Means						
Variances	t-value	df	2-Tail Sig		SE of Diff	95% CI for Diff
Equal	-1.48	115	.143	.755		(-2.611, .381)
Unequal	-1.53	114.80	.128	.727		(-2.555, .325)

Table 8

Computer Experience, High-Low with Rational Approach

		Variable	Number of Cases	Mean	SD	SE of Mean	
RATIONAL APPROACH							
		COMPUTER EXPERIENCE	HIGH	65	21.3538	4.083	.506
		COMPUTER EXPERIENCE	LOW	54	22.5185	4.871	.663
Mean Difference = -1.1647							
Levene's Test for Equality of Variances: F = 1.375 P = .243							
t-test for Equality of Means							
Variances	t-value	df	2-Tail Sig	SE of Diff	95% CI for Diff		
Equal	-1.42	117	.159	.821	(-2.790, .461)		
Unequal	-1.40	103.68	.166	.834	(-2.819, .490)		

Computer experience split by high and low use was not significantly impacted by social influence or a rational approach (Table 7, Table 8). H3, therefore, is not accepted.

In conclusion, the three variables were explained through the three hypotheses. Testing H1 produced results showing there is a relationship between e-mail use, the rational approach variable and the social influence variable. H1 can not be accepted in its entirety. Only social influence and the rational approach are significantly correlated to e-mail use.

When tested, H2 demonstrated that Social Influence explained more of the variance than either the rational approach or computer experience. H2 is not accepted because the rational approach does not account for use more than social influence.

Testing H3 found that computer experience split by high and low use was not significantly impacted by social influence or a rational approach. H3, therefore, is not accepted.

Chapter V

Conclusion

The purpose of this study was to examine what impact social influence, personal experience and rational approach characteristics have on electronic mail use. Of those who answered, the average age was 44 with well over half having received at least a bachelor's degree.

The average amount of years of computer use was over 10, while average electronic mail use was a little over 3 years. On the average, the computer was reportedly used almost 3.5 hours a day, while electronic mail was used 51 minutes a day. Just under half of the respondents reported their computer expertise as above average or accomplished.

Almost everyone reported that computers were either very important or extremely important for the daily activities on the job. A majority felt that electronic mail was at least very important to daily activities on the job. When asked what the most important characteristics of electronic mail was, it was apparent that respondents thought the most important characteristic was quickness.

It was hypothesized that social influence, the rational approach and personal experience would be correlated. What was discovered was that while the rational approach and social influence were related to e-mail use, as well as

to each other, personal computer expertise was not related to any of the other three variables.

It was also hypothesized that the rational approach generally explained use more than social influence or computer experience. Social influence explained use more than either the rational approach or computer expertise.

The third hypothesis was that the less experienced user would be more affected by social influence while a more experienced user would be more impacted by the rational approach. There was no influence demonstrated either way.

Contrary to predictions, social influence had more of an impact on use than rational choice or personal experience. Also notable was the fact that personal experience did not seem to affect use.

Limitations

These results must be taken in the context studied. Only one sample location was used. The small sample size could be attributed to the length of the survey. Also, some users may not have been comfortable with the electronic mail system. Self-selection played a role in which surveys were answered. Whatever the reasons, the small sample size limits the generalizability of this study.

Future Research

In the future, it would be interesting to look at non-users and why they would continue to avoid the newer communication technologies. It would also

be beneficial to use the list of adjectives described to create questions in a future survey. Soon, however, electronic mail will be as common as the telephone. The research then can turn to how the different communication technologies are integrated into daily use and whether the user is actually just another part of that integrated system. In conclusion, we are just beginning to understand the effects and uses of our new communication technologies, and only further research will help users understand the importance of this technology.

APPENDIX 1

1. What is the highest academic degree attained by the participants?

DEGREE		highest academic degree			Valid	Cum
Value Label	Value	Frequency	Percent	Percent	Percent	
high school	1	26	20.0	22.0	22.0	
associates degree	2	15	11.5	12.7	34.7	
bachelors	3	27	20.8	22.9	57.6	
masters	4	48	36.9	40.7	98.3	
phd	5	2	1.5	1.7	100.0	
	9	12	9.2	Missing		
	Total	130	100.0	100.0		
Mean	2.873	Median	3.000	Mode	4.000	
Std dev	1.216	Variance		1.479		
Valid cases	118	Missing cases	12			

2. What is the average age of the participants?

AGE1					
Mean	44.138	Median	44.000	Mode	28.000
Std dev	10.999	Variance			120.989
* Multiple modes exist. The smallest value is shown.					
Valid cases	123		Missing cases	7	

3. What is the average amount of years of computer use by the participants?

COMYR					
Mean	10.469	Median	10.000	Mode	10.000
Std dev	6.050	Variance			36.602
Valid cases	130		Missing cases	0	

4. What is the average amount of reported years of electronic mail use by the participants?

EMALYR					
Mean	3.562	Median	3.000	Mode	3.000
Std dev	2.433			Variance	5.919
Valid cases	130		Missing cases	0	

5. What is the average amount of computer use per day?

COMUSE					
Mean	3.397	Median	3.000	Mode	3.000
Std dev	1.747			Variance	3.051
Valid cases	129		Missing cases	1	

6. What is the average amount of electronic mail use per day?

EMAILUSE					
Mean	.850	Median	.600	Mode	1.000
Std dev	.799			Variance	.639
Valid cases	129		Missing cases	1	

7. How important are computers to the participants jobs?

IMPCOMP		imp computers at job			
Value Label		Value	Frequency	Percent	Valid Percent Cum Percent
		2	1	.8	.8 .8
somewhat important		3	12	9.2	9.4 10.2
		4	53	40.8	41.4 51.6
extremely important		5	62	47.7	48.4 100.0
		9	2	1.5	Missing
		Total	130	100.0	100.0
Mean	4.375	Median	4.000	Mode	5.000
Std dev	.687		Variance		.472
Valid cases		128	Missing cases		2

8. How important is electronic mail use for the job?

EMAILIMP		email imp in job			
Value Label		Value	Frequency	Percent	Valid Percent Cum Percent
not important at all		1	2	1.5	1.6 1.6
		2	2	1.5	1.6 3.1
somewhat important		3	32	24.6	25.0 28.1
		4	60	46.2	46.9 75.0
extremely important		5	32	24.6	25.0 100.0
		9	2	1.5	Missing
		Total	130	100.0	100.0
Mean	3.922	Median	4.000	Mode	4.000
Std dev	.838		Variance		.703
Valid cases		128	Missing cases		2

9. How many more people do the participants communicate with because of e-mail?

MORECOM		more comm by email			
Value Label		Value	Frequency	Percent	Valid Percent Cum Percent
no more		1	7	5.4	5.5 5.5
		2	12	9.2	9.4 14.8
slightly more		3	23	17.7	18.0 32.8
		4	49	37.7	38.3 71.1
many more		5	37	28.5	28.9 100.0
		9	2	1.5	Missing
		Total	130	100.0	100.0
Mean	3.758	Median	4.000	Mode	4.000
Std dev	1.135		Variance		1.287
Valid cases		128	Missing cases		2

10. How much do you use e-mail to request information?

REQINFO		request info				
Value Label		Value	Frequency	Percent	Valid Percent	Cum Percent
		1	5	3.8	3.9	3.9
		2	11	8.5	8.7	12.6
		3	39	30.0	30.7	43.3
		4	55	42.3	43.3	86.6
		5	17	13.1	13.4	100.0
		9	3	2.3	Missing	
		Total	130	100.0	100.0	
Mean	3.535	Median	4.000	Mode	4.000	
Std dev	.966		Variance	.933		
Valid cases		127	Missing cases	3		

11. How much do you use e-mail to answer questions?

ANSWERQ		answer questions				
Value Label		Value	Frequency	Percent	Valid Percent	Cum Percent
		1	4	3.1	3.1	3.1
		2	7	5.4	5.5	8.6
		3	38	29.2	29.7	38.3
		4	64	49.2	50.0	88.3
		5	15	11.5	11.7	100.0
		9	2	1.5	Missing	
		Total	130	100.0	100.0	
Mean	3.617	Median	4.000	Mode	4.000	
Std dev	.880		Variance	.774		
Valid cases		128	Missing cases	2		

12. How much do you use e-mail to circulate memos?

MEMO		circulate memos				
Value Label		Value	Frequency	Percent	Valid Percent	Cum Percent
		1	10	7.7	7.9	7.9
		2	23	17.7	18.1	26.0
		3	26	20.0	20.5	46.5
		4	42	32.3	33.1	79.5
		5	26	20.0	20.5	100.0
		9	3	2.3	Missing	
		Total	130	100.0	100.0	
Mean	3.402	Median	4.000	Mode	4.000	
Std dev	1.223		Variance	1.496		
Valid cases		127	Missing cases	3		

How do you rate the following features:

13. Ability to communicate at different times

COMDIF		com different times imp				
Value Label		Value	Frequency	Percent	Valid Percent	Cum Percent
		2	4	3.1	3.1	3.1
somewhat important		3	19	14.6	15.0	18.1
		4	58	44.6	45.7	63.8
extremely important		5	46	35.4	36.2	100.0
		9	3	2.3	Missing	
		Total	130	100.0	100.0	
Mean	4.150	Median	4.000	Mode	4.000	
Std dev	.788		Variance	.620		
Valid cases		127	Missing cases	3		

14. Assurance message is received

MESSRECV		assurance message received			
Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1	2	1.5	1.6	1.6
	2	1	.8	.8	2.4
	3	20	15.4	15.7	18.1
	4	61	46.9	48.0	66.1
	5	43	33.1	33.9	100.0
	9	3	2.3	Missing	
	Total	130	100.0	100.0	
Mean	4.118	Median	4.000	Mode	4.000
Std dev	.813	Variance	.661		
Valid cases	127	Missing cases	3		

15. Speed of response

SPEDRESP		speed of response imp			
Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	2	1	.8	.8	.8
	3	29	22.3	23.0	23.8
	4	65	50.0	51.6	75.4
	5	31	23.8	24.6	100.0
	9	4	3.1	Missing	
	Total	130	100.0	100.0	
Mean	4.000	Median	4.000	Mode	4.000
Std dev	.716	Variance	.512		
Valid cases	126	Missing cases	4		

16. Clarity of message

CLARITY		clarity importance			
Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1	1	.8	.8	.8
	2	5	3.8	4.0	4.8
	3	32	24.6	25.4	30.2
	4	64	49.2	50.8	81.0
	5	24	18.5	19.0	100.0
	9	4	3.1	Missing	
	Total	130	100.0	100.0	
Mean	3.833	Median	4.000	Mode	4.000
Std dev	.807	Variance	.652		
Valid cases	126	Missing cases	4		

17. Ability to store message

STORE		ability to store imp			
Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1	1	.8	.8	.8
	2	6	4.6	4.7	5.5
	3	36	27.7	28.1	33.6
	4	52	40.0	40.6	74.2
	5	33	25.4	25.8	100.0
	9	2	1.5	Missing	
	Total	130	100.0	100.0	
Mean	3.859	Median	4.000	Mode	4.000
Std dev	.885	Variance	.783		
Valid cases	128	Missing cases	2		

18. Message forwarding

FORWARD		message forwarding imp			
Value Label		Value	Frequency	Percent	Valid Percent Cum Percent
		2	4	3.1	3.1 3.1
		3	44	33.8	34.6 37.8
		4	54	41.5	42.5 80.3
		5	25	19.2	19.7 100.0
		9	3	2.3	Missing
		Total	130	100.0	100.0
Mean	3.787	Median	4.000	Mode	4.000
Std dev	.793		Variance		.629
Valid cases		127	Missing cases		3

19. Multiple messaging

MULTMESS		multiple message imp			
Value Label		Value	Frequency	Percent	Valid Percent Cum Percent
		1	2	1.5	1.6 1.6
		2	10	7.7	7.9 9.5
		3	36	27.7	28.6 38.1
		4	48	36.9	38.1 76.2
		5	30	23.1	23.8 100.0
		9	4	3.1	Missing
		Total	130	100.0	100.0
Mean	3.746	Median	4.000	Mode	4.000
Std dev	.963		Variance		.927
Valid cases		126	Missing cases		4

20. Social Influence Characteristics Reliability

RELIABILITY		ANALYSIS		SCALE(ALPHA)		
N of Cases =		121.0				
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3.5744	2.5455	4.1157	1.5702	1.6169	.3354
Analysis of Variance						
Source of Variation		Sum of Sq.	DF	Mean Square	F	Prob.
Between People		346.9835	120	2.8915		
Within People		620.5000	605	1.0256		
Between Measures		202.9380	5	40.5876	58.3208	.0000
Residual		417.5620	600	.6959		
Total		967.4835	725	1.3345		
Grand Mean	3.5744					
Reliability Coefficients		6 items				
Alpha =	.7593			Standardized item alpha =		.7692

21. Rational Approach Variable Reliability

RELIABILITY		ANALYSIS		SCALE(ALPHA)		
N of Cases =		123.0				
Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	3.6247	3.3659	3.9106	.5447	1.1618	.0349
Analysis of Variance						
Source of Variation		Sum of Sq.	DF	Mean Square	F	Prob.
Between People		437.8645	122	3.5891		
Within People		285.1667	615	.4637		
Between Measures		21.4539	5	4.2908	9.9251	.0000
Residual		263.7127	610	.4323		
Total		723.0312	737	.9810		
Grand Mean	3.6247					
Reliability Coefficients		6 items				
Alpha =		.8795		Standardized item alpha =		.8810

APPENDIX 2
E-MAIL SURVEY

E-mail Survey

Survey # _____

Hello, I'm Capt. Michele DeWerth. I'm currently in an Air Force Institute of Technology program and I'm doing research. Below are several questions about how you use the e-mail system in your office. There are no right or wrong answers—I am just interested in getting your honest opinions. Let me assure you that your answers will remain strictly confidential. Your answers will never be associated with your name. I only wish to look at the range of answers across users of the system. This will take only a few minutes of your time. To give me the best possible information, please answer all the questions. Also, please feel free to write anything on the questionnaire you think will help us understand the system and its usage.

Please answer the questionnaire on the message you received and then e-mail it back to me to the address on top. Use the down arrow key to move down. If there are blanks for the answers, fill the blanks in with what is appropriate. For a question that runs on a continuum (1-5), please type the answer on the blank line below the question, justified to the left.

Example:

2 1. I believe it's a sunny day today.

Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
1	2	3	4	5

Example 2:

2hrs 30min 2. How much do you watch TV in an average day?

_____hours _____minutes

I. The following section addresses issues of how and when you use e-mail.

1. What kind(s) of electronic mail (e-mail) accounts do you have?

_____office _____personal

2. Approximately how long have you been using a computer (total time -- not just the e-mail system)?

_____ years _____ months

3. How long have you been using the (e-mail) system?

_____ years _____ months

4. On the average day, how many hours do you spend using a computer?

_____ hours _____ minutes

5. Of the time you spend using a computer, what percent of that time is spent using the e-mail system?

_____ %

6. Do you have access to e-mail off-duty?

_____ yes _____ no

7. If, yes, then in an average week, how much off-duty time do you use e-mail ?

_____ hours _____ minutes

8. List three adjectives that describe why you find e-mail useful.

9. List three adjectives that describe why you don't find e-mail useful.

10. Which of the following best describes how you would rate your expertise with computers and computer software?

none	minimal	above average	accomplished average	user
1	2	3	4	5

II. The following section addresses issues concerning how and why others in your office use e-mail.

11. How is your e-mail system configured? (Annotate all that apply)

☐ On a centralized office computer

☐ Every individual has a computer with modem on his/her desk

☐ A few people in the office have a computer and modem on their desks.

☐ Through a terminal (not a microcomputer)

12. How much do other members of your office use e-mail?

not at all	seldom	occasionally	often	all the time
1	2	3	4	5

13. Everyone I know seems to use e-mail.

not accurate at all	not very accurate	somewhat accurate	mostly very accurate	accurate
1	2	3	4	5

14. I use e-mail because everyone else in my office does.

not accurate at all	not very accurate	somewhat accurate	mostly very accurate	accurate
1	2	3	4	5

15. Members of my office favor different types of communication over e-mail (different types of communication such as memos and telephone).

not accurate at all	not very accurate	somewhat accurate	mostly very accurate	accurate
1	2	3	4	5

16. I use e-mail because co-workers helped me learn the system.

not accurate at all	not very accurate	somewhat accurate	mostly very accurate	accurate
1	2	3	4	5

17. I don't have to use e-mail because someone in my office is responsible for reading all the e-mail.

not accurate at all	not very accurate	somewhat accurate	mostly very accurate	accurate
------------------------	----------------------	----------------------	-------------------------	----------

1	2	3	4	5
---	---	---	---	---

18. I use e-mail because others expect me to use it.

not accurate at all	not very accurate	somewhat accurate	mostly very accurate	accurate
------------------------	----------------------	----------------------	-------------------------	----------

1	2	3	4	5
---	---	---	---	---

19. Many people I need to communicate with use e-mail.

not accurate at all	not very accurate	somewhat accurate	mostly very accurate	accurate
------------------------	----------------------	----------------------	-------------------------	----------

1	2	3	4	5
---	---	---	---	---

20. I use e-mail because I can communicate with other people that are geographically separated.

not accurate at all	not very accurate	somewhat accurate	mostly very accurate	accurate
------------------------	----------------------	----------------------	-------------------------	----------

1	2	3	4	5
---	---	---	---	---

21. I use e-mail when I don't have to communicate with someone at the same time.

not accurate at all	not very accurate	somewhat accurate	mostly accurate	very accurate
1	2	3	4	5

III. The following addresses the reasons you use e-mail.

22. Ease of use -- i.e., how simple it is to operate, how easy it is to learn

difficult to use	not very easy to use	somewhat easy	mostly easy	very easy to use
1	2	3	4	5

23. Reliability -- i.e., how dependable it is

not reliable at all	not very reliable	somewhat reliable	mostly reliable	very reliable
1	2	3	4	5

24. Flexibility -- i.e., how well it allows you to do different types of jobs, or use it for a number of different purposes

not at all flexible	not very flexible	somewhat flexible	mostly flexible	very flexible
1	2	3	4	5

25. Power of the program -- i.e., its ability to get the job done, its speed of communications

not powerful at all	not very powerful	somewhat powerful	mostly very powerful	powerful
1	2	3	4	5

26. Effectiveness -- i.e., its ability to help you work more efficiently

not effective at all	not very effective	somewhat effective	mostly very effective	effective
1	2	3	4	5

27. Time-saver -- i.e., its ability to reduce time spent in completing job tasks

not a time-saver	not a great time-saver	somewhat of a time-saver	mostly a time-saver	a great time-saver
1	2	3	4	5

How much do you use the e-mail system for the following reasons?

28. Drafting or rewriting documents

not at all	seldom	occasionally	often	all the time
1	2	3	4	5

29. Electronic document delivery

not at all	seldom	occasionally	often	all the time
1	2	3	4	5

30. Soliciting or expressing opinions

not at all	seldom	occasionally	often	all the time
1	2	3	4	5

31. Maintaining office operations

not at all	seldom	occasionally	often	all the time
1	2	3	4	5

32. Coordinating office activities

not at all	seldom	occasionally	often	all the time
1	2	3	4	5

33. Requesting information

not at all	seldom	occasionally	often	all the time
1	2	3	4	5

34. Answering questions

not at all	seldom	occasionally	often	all the time
1	2	3	4	5

35. Making decisions

not at all	seldom	occasionally	often	all the time
1	2	3	4	5

36. Giving out task assignments

not at all	seldom	occasionally	often	all the time
1	2	3	4	5

37. Receiving task assignments

not at all	seldom	occasionally	often	all the time
1	2	3	4	5

38. Circulating memoranda

not at all	seldom	occasionally	often	all the time
1	2	3	4	5

39. Personal messages

not at all	seldom	occasionally	often	all the time
1	2	3	4	5

40.

Other? _____

not at all	seldom	occasionally	often	all the time
1	2	3	4	5

IV. The following section addresses the type of training you received on e-mail usage.

Questions 41-43 address what type of informal and formal training you received on e-mail usage.

41. I learned on my own

not at all	not very much	some	mostly	totally
1	2	3	4	5

42. Co-workers trained me

not at all	not very much	some	mostly	totally
1	2	3	4	5

43. I received formal training

not at all	not very much	some	mostly	totally
1	2	3	4	5

Questions 44-46 addresses how important you believe formal and informal e-mail system training is.

44. I learned on my own

not important at all	not very important	somewhat important	very important	extremely important
1	2	3	4	5

45. Co-workers trained me

not important at all	not very important	somewhat important	very important	extremely important
1	2	3	4	5

46. I received formal training

not important at all	not very important	somewhat important	very important	extremely important
1	2	3	4	5

47. How many more people do you find yourself communicating with because of e-mail?

no more	very few	slightly more	somewhat more	many more
1	2	3	4	5

48. How important do you think microcomputers are for daily activities on the job?

not important at all	not very important	somewhat important	very important	extremely important
1	2	3	4	5

49. How important do you think e-mail is for daily activities on the job?

not important at all	not very important	somewhat important	very important	extremely important
1	2	3	4	5

Please rate the importance of each of the following e-mail features to you in questions 50-59.

50. Ability to communicate at different times (i.e., message sent and received at convenience sender and receiver)

not important at all	not very important	somewhat important	very important	extremely important
1	2	3	4	5

51. Assurance messages will be received

not important at all	not very important	somewhat important	very important	extremely important
1	2	3	4	5

52. Ease or speed of response to messages

not important at all	not very important	somewhat important	very important	extremely important
1	2	3	4	5

53. Security of messages

not important at all	not very important	somewhat important	very important	extremely important
1	2	3	4	5

54. Clarity of written messages

not important at all	not very important	somewhat important	very important	extremely important
1	2	3	4	5

55. Ability to store messages

not important at all	not very important	somewhat important	very important	extremely important
1	2	3	4	5

56. Message forwarding

not important at all	not very important	somewhat important	very important	extremely important
1	2	3	4	5

57. Ability for multiple messages

not important at all	not very important	somewhat important	very important	extremely important
1	2	3	4	5

58. Messages oriented toward work-related tasks

not important at all	not very important	somewhat important	very important	extremely important
1	2	3	4	5

59. Social messages

not important at all	not very important	somewhat important	very important	extremely important
1	2	3	4	5

60. What is your rank?

61. How long have you been in the Air Force?

_____years _____months

62. What is the highest academic degree you completed in school?

63. What year were you born?

REFERENCES

- Albertson, L. (1980). Trying to eat an elephant. Communication Research, 7, 387-400.
- Asch, S. (1952). Social psychology. New York: Prentice-Hall, Inc.
- Attewell, P. (1992). Technology diffusion and organizational learning: The case of business computing. Organizational Science, 3(1), 1-19.
- Bandura, A. (1977). Social learning theory. Englewood Cliffs, N.J.: Prentice-Hall, Inc.
- Baronas, A., & Louis, M. (1988). Restoring a sense of control during implementation: How user involvement leads to acceptance. MIS Quarterly, (12), 111-123.
- Chesebro, J. (1987). Computer-mediated interpersonal communication. In B. D. Ruben (Ed.), Information and Behavior, (pp. 202-224). New Brunswick, N.J.: Transaction, Inc.
- Culnan, M., & Markus, M. (1987). Information technologies. In F.M. Jablin, L. L. Putnam, K. H. Roberts, & L. W. Porter (Eds.), Handbook of organization communication, (pp.420-443). Newbury Park, CA: Sage.
- Daft, R., & Lengel, R. (1984). Information richness: A new approach to managerial behavior and organization design. In B. Staw and L.L. Cummings (Eds.), Research in Organizational Behavior: Vol. 6 (pp.191-234). Greenwich, CT: Jai Press, Inc.
- Daft, R., & Lengel, R. (1986). Organizational information requirements, media richness and structural design. Management Science, 32(5), 554-571.
- Daft, R., Lengel, R., & Trevino, L. (1987). Message equivocality, media selection, manager performance: Implications for information systems. MIS Quarterly, 11, 355-366.
- Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13, 319-339.

- Duncan, O., & Stenbeck, M. (1987). Are likert scales unidimensional? Social Science Research, 16, 245-259.
- Edinger, J., & Patterson, M. (1983). Nonverbal involvement and social control. Psychological Bulletin, 93(1), 30-56.
- Festinger, L. (1954). A theory of social comparison processes. Human Relations, 7, 117-140.
- Finholt, T., & Sproull, L. (1990). Electronic groups at work. Organization Science, 1(1), 41-64.
- Fulk, J., & Boyd, B. (1991). Emerging theories of communication in organizations. Journal of Management, 17(2), 407-446.
- Fulk, J., Schmitz, J., & Steinfield, C. (1990). A social influence model of technology use. In J. Fulk and C. Steinfield (Eds.), Organizations and Communication Technology, (pp. 117-140). Newbury Park, California: Sage.
- Fulk, J., Steinfield, C., Schmitz J., & Power, J. (1987). A social information processing model of media use in organizations. Communication Research, 14(5), 529-552.
- Galati, T. (1986, October). Electronic communication: implications for training. Training and Development Journal, pp. 42-45.
- Galbraith, J. R. (1977). Organization design. Reading, MA.: Addison-Wesley Publishing Company.
- Golden, P., Beauclair R., & Sussman, L. (1992). Factors affecting electronic mail use. Computers in Human Behavior, 8, 297-311.
- Hiltz, S. R. (1984). Online communities: A case study of the office of the future. Norwood, N.J.: Ablex Publishing Corporation.
- Hiltz, S. R., & Johnson, K. (1990). User satisfaction with computer-mediated communication systems. Management Science, 36(5), 739-764.
- Huff, C. W., & Dickerson, J. (1990). Finding stable support for computing in psychology: Lessons from innovation diffusion in organizations. 20th Annual Meeting of the Society for Computers in Psychology, 23(2), 130-133.

- Kerr, E., & Hiltz, S. R. (1982). Computer-Mediated communication systems: Status and evaluation. New York: Academic Press.
- Kiesler, S., Siegel J., & McGurie T. (1984). Social psychological aspects of computer-mediated communication. American Psychologist, 39(10), 1123-1134.
- Kim, Y. (1994). Electronic mail users' perceptions of computer-mediated vs. face-to-face communication: A comparative study. Unpublished doctoral dissertation, Florida State University.
- Klepper, R. (1990). A transaction cost theory of end-user computing. In K. M. Kaiser, & H. J. Oppelland (Eds.), Desktop Information Technology (pp. 5-14). Amsterdam: Elsevier/North Holland.
- Lea, M. (1991). Rationalist assumptions in cross-media comparisons of computer-mediated communication. Behaviour & Information Technology, 10(2), 153-172.
- Lengel, R., & Daft, R. (1988). The selection of communication media as executive skill. The Academy of Management Executive, 11(3), 225-232.
- Macay, W. (1988). Diversity in the use of electronic mail: A preliminary inquiry. ACM Transactions on Office Information Systems, 6(4), 380-397.
- Maldé, B. (1992). Case study: What price usability audits? The introduction of electronic mail into a user organization. Behaviour & Information Technology, 11(6), 345-353.
- Midgley, D., & Dowling, G. (1993). A longitudinal study of product form innovation: The interaction between predispositions and social messages. Journal of Consumer Research, 19(4), 611-625.
- Millman, Z., & Hartwick, J. (1987). The impact of automated office systems on middle managers and their work. MIS Quarterly, 11, 479-491.
- Panko, R. (1984). Electronic mail: the alternatives. Office Administration and Automation, 45(6), 37-43.
- Pittard, V. (1990). The mechanical user. In N. Williams, & P. Hartley (Eds.), Technology in Human Communication (pp. 75-87). London: Pinter Publishers.

- Rice, R. E. (1980). The impacts of computer-mediated organizational and interpersonal communication. In M. Williams (Ed.), The annual review of information science and technology Vol. 15 (pp. 221-249). White Plains, N.Y.: Knowledge Industry Publications.
- Rice, R. E. (1987). Computer-mediated communication and organizational innovation. Journal of Communication, 37(4), 65-94.
- Rice, R. E. (1993). Media appropriateness: Using social presence theory to compare traditional and new organizational media. Human Communication Research, 19(4), 451-484.
- Rice, R. E., & Bair, J. (1983). Conceptual role of new communication technology in organization productivity. In R. Vondran et al. (Eds.), Productivity in the Information Age: ASIS Proceedings, Vol. 20 (pp. 4-8).
- Rice, R. E., Grant A., Schmitz J., & Torobin, J. (1990). Individual and network influences on the adoption and perceived outcomes of electronic messaging. Social Networks, 12, 27-55.
- Rice, R. E., & Love, G. (1987). Electronic emotion. Communication Research, 14(1), 85-108.
- Rice, R. E. & Shook, D. (1986). End-user computing: Access, usage and benefits. In J. M. Hurd (Ed.), Proceedings of the 49th Meeting of the American Society for Information Science, Vol. 23 (pp. 265-270).
- Rice, R. E., & Shook, D. (1990). Relationships of job categories and organizational levels to use of communication channels, including electronic mail: A meta-analysis and extension. Journal of Management Studies, 27(2), 195-229.
- Rice, R. E. & Torobin, J. (1986). Expectations about the impacts of electronic messaging. In J. M. Hurd (Ed.), Proceedings of the 49th Meeting of the American Society for Information Science, Vol. 23 (pp. 271-276).
- Rice, R. E., & Williams, F. (1984). Theories old and new: The study of new media. In Rice and Associates (Eds.), The New Media: Communication, Research and Technology (pp. 55-80). Beverly Hills, CA: Sage Publications.

- Robey, D. (1979). Users attitudes and management information system use. Academy of Management Journal, 22(3), 527-538.
- Robey, D., & Zmud, R. (1990). Research on end-user computing: Theoretical perspectives from organization theory. In K. M. Kaiser, & H. J. Oppelland (Eds.), Desktop Information Technology (pp. 15-36). Amsterdam: Elsevier/North Holland.
- Rogers, E. (1983). Diffusion of Innovations (3rd ed.). New York: The Free Press.
- Rogers, E., & Rafaeli, S. (1985). Computers and communication. In B. D. Ruben (Ed.), Information and Behavior Vol. 1. (pp. 95-112). New Brunswick, N.J.:Transaction, Inc.
- Salancik, G. R., & Pfeffer, J. (1978). A social information processing approach to job attitudes and task design. Administrative Science Quarterly, 23, 224-255.
- Schewe, C. D. (1976). The management information system user: An exploratory behavioral analysis. Academy of Management Journal, 19(4), 577-590.
- Shaefermeyer, M., & Sewell, E. (1988). Communicating by electronic mail. American Behavioral Scientist, 32(2), 112-123.
- Schmitz, J., & Fulk, J. (1991). Organizational colleagues, media richness, and electronic mail: A test of the social influence model of technology use. Communication Research, 18(4), 487-523.
- Schuck, G. (1985). Intelligent technology, intelligent workers: A new pedagogy for the high-tech work place. Organizational Dynamics, 14(2), 66-79.
- Sein, M. K., & Bostrom, R. (1989). Individual differences and conceptual models in training novice users. Human-Computer Interaction, 4, 197-229.
- Steinfeld, C. (1986a). Computer-mediated communication systems In M. E. Williams (Ed.), Annual Review of Information Science and Technology Vol. 21 (pp. 167-202). White Plains, NY: Knowledge Industry.

- Steinfeld, C. (1986b). Computer-mediated communication in an organizational setting: Explained task-related and socioemotional uses. In M. L. McLaughlin (Ed.), Communication Yearbook Vol 9 (pp. 777-804). Beverly Hills, CA: Sage.
- Steinfeld, C., & Fulk, J. (1987). On the role of theory on research on information technologies in organizations: An introduction to the special issue. Communication Research, 14(5), 479-490.
- Sproull, L., & Kiesler, S. (1986). Reducing social context cues: Electronic mail in organizational communication. Management Science, 32(11), 1492-1512.
- Sullivan, C. (1992). Modeling information technology use and its effect on organizational productivity. Paper presented at the International Communication Association Conference, Miami.
- Sullivan, C. (1995). Preferences for electronic mail in organizational communication tasks. Manuscript accepted for publication. Journal of Business Communication, 21.
- Sullivan, C., & Brown, L. (1993, November). The role of electronic mail on participation in the decision making process. Paper presented at the Speech Communication Association Conference, Miami.
- Sullivan, C., & Rayburn, J. D. (1990, June). The impact of electronic mail on the legislative process in the Florida house of representatives. Paper presented at the International Communication Association Conference, Dublin, Ireland.
- Teubner, A., & Vaske, J. (1988). Monitoring computer users' behaviour in office environments. Behaviour and Information Technology, 7(1), 67-78.
- Thomas, J., & Griffin, R. (1983). The social information processing model of task design: A review of the literature. Academy of Management Review, 8(4), 677-682.
- Trevino, L. K., Lengel, R., & Daft, R. (1987). Media symbolism, media richness and media choice in organizations: A symbolic interactionist perspective. Communication Research, 14(5), 553-574.
- Trevino, L. K., & Webster, J. (1992). Flow in computer-mediated communication: Electronic mail and voice mail evaluation and impacts. Communication Research, 19(5), 539-573.

- Tushman, M., & Nadler, D. (1978). Information processing as an integrating concept in organizational design. Academy of Management Review, 3, 613-624.
- Waern, Y., Malmsten, N., Oestreicher, L., Hjlmarsson, A., & Gidlof-Gunnarsson, A. (1991). Office automation and users' need for support. Behaviour & Information Technology, 10(6), 501-514.
- Weick, K. E. (1979). The social psychology of organizing. Reading, MA: Addison-Wesley.
- Williams, E. (1977). Experimental comparisons of face-to-face and mediated communication: A review. Psychological Bulletin, 84(5) 963-976.
- Williams, F., Rice, R. E., & Dordick, H. (1987). Behavioral impacts in the information age. In B. D. Ruben (Ed.), Information and Behavior (pp. 161-182). New Brunswick, N.J.: Transaction, Inc.
- Zmud, R. (1979). Individual differences and MIS success: A review of empirical literature. Management Science, 25(10), 966-979.

BIOGRAPHICAL SKETCH

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